Department of Natural Resources

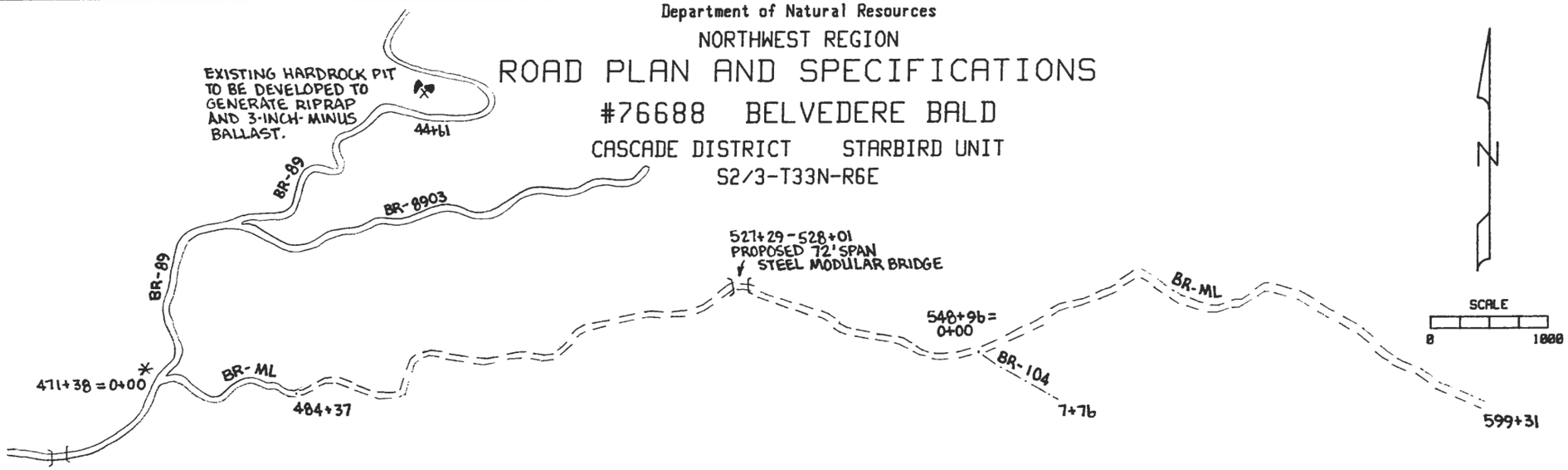
NORTHWEST REGION

ROAD PLAN AND SPECIFICATIONS

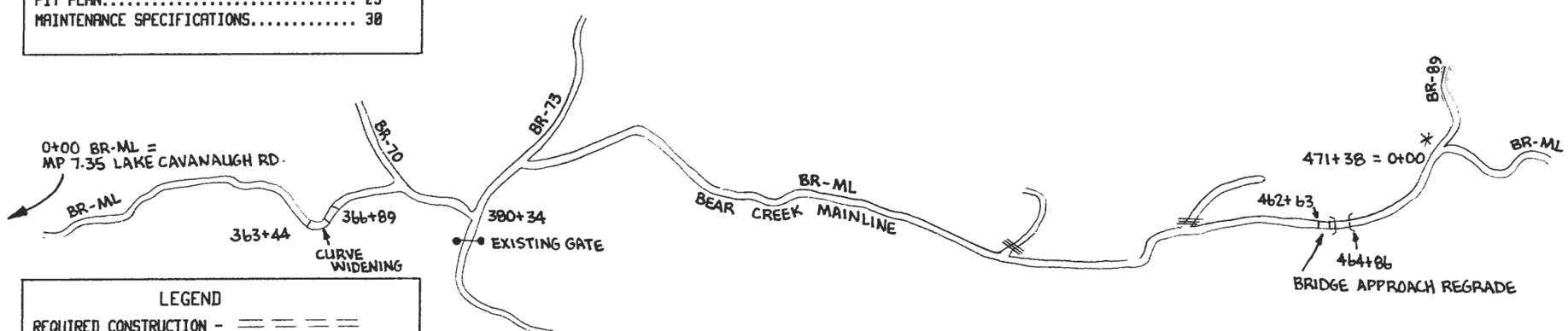
#76688 BELVEDERE BALD

CASCADE DISTRICT STARBIRD UNIT

S2/3-T33N-R6E



SHEET INDEX



LEGEND

REQUIRED CONSTRUCTION -

OPTIONAL CONSTRUCTION -

REQUIRED RECONSTRUCTION -

OPTIONAL RECONSTRUCTION -

DESIGNED BY	REVIEWED BY	DATE	SHEET
WARNER	BJ 11-18-04	11-01-04	1 OF 30

SECTION 0 - SCOPE OF PROJECT

This project includes but is not limited to the following major items:

1. Construction of the Bear Creek Mainline (BR-ML) and the BR-104 road totals 122.70 stations. Construction will involve clearing, grubbing, excavation and embankment to subgrade, landing and turnout construction, culvert installation, steel modular bridge installation, and application of 3-inch-minus ballast rock.

2. Reconstruction of the BR-ML totals 5.68 stations. Reconstruction will involve blading, shaping, and ditching the road surface, clearing, grubbing, excavation and embankment to subgrade, and application of 3-inch-minus ballast rock.

3. Development of an existing hardrock source at station 44+61 of the BR-89 road. Development will involve clearing, stripping, drilling, shooting, and processing rock to generate riprap and 3-inch-minus ballast rock. Pit plan on sheet 29.

4. Acquisition and installation of a 72 foot span, pre-constructed, modular type, painted steel bridge and pre-cast concrete footings on the BR-ML road.

5. Acquisition of ¾-inch-minus crushed rock from a commercial rock source for use on steel bridge decks and as a leveling course for all precast concrete footings.

Construction centerline is staked. Any additional staking or referencing necessary to build the road to the following specifications shall be the responsibility of the Purchaser. Construction staking notes are available on request.

SECTION 1 - GENERAL CLAUSES

1.1-1

Clauses in this plan apply to all construction and reconstruction including landings unless otherwise noted.

1.1-2

Construction or reconstruction of the following roads is required. These roads shall be constructed or reconstructed on the State's location and in accordance with this Road Plan.

Road	Length	Type
BR-ML	363+44 to 366+89	Reconstruction
BR-ML	462+63 to 464+86	Reconstruction
BR-ML	484+37 to 599+31	Construction

1.1-3

Construction of the following road is not required. If the Purchaser elects to use this road it shall be constructed on the State's location and in accordance with this Road Plan.

Road	Length	Type
BR-104	0+00 to 7+76	Construction

1.1-4

If the purchaser desires a road location or design change, a revised road plan shall be submitted to the State for consideration.

1.1-5

On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or purchaser's choice of construction season or techniques shall be at the purchaser's expense.

1.2-1

Construction, reconstruction, or abandonment, of any road shall not be permitted between November 1 and March 31 unless authorized in writing by the contract administrator or as otherwise detailed in this plan. If permission is granted to operate between November 1 and March 31, the purchaser may be required to provide a "Closed Season Plan" to include further protection of water, soil, roads, and other forest assets.

1.2-2

Due to wildlife concerns construction of the following roads shall not be permitted during the corresponding restricted dates unless otherwise approved in writing by the contract administrator.

Road	Location	Restricted date
BR-ML	543+33 to 557+11	April 1st to July 15th
BR-104	0+00 to 7+76	April 1st to August 31st

1.2-3

Purchaser shall not use roads constructed or reconstructed under this Road Plan for hauling, other than timber cut on the right of way, without written approval from the contract administrator.

1.2.1-1

Pioneering shall not extend past construction that will be completed during the current construction season. Pioneering shall not extend more than 500 feet beyond completed construction at any given time unless approved, in writing, by the contract administrator. In addition, the following measures will be taken as pioneering progresses:

- Drainage shall be provided on all uncompleted construction as approved, in writing, by the contract administrator.
- Clearing and grubbing shall be completed prior to starting excavation and embankment.
- Culvert placement in live streams shall precede embankment.
- Culverts shall be installed in completed subgrade as construction progresses.
- Subgrade, ditches and culvert installations, once completed, are subject to written approval by the contract administrator prior to rock application.

1.3-1

Rock hauling on any road shall not be permitted between November 1 and March 31 unless authorized in writing by the contract administrator. If permission is granted to operate between November 1 and March 31, the purchaser may be required to provide a "Closed Season Plan" to include further protection of water, soil, roads, and other forest assets.

1.4-3

Construction stake reference points (R.P.'s) that are moved or damaged at any time during construction shall be reset in their original locations by the purchaser. Excavation and embankment shall not proceed on road segments controlled by said R.P.'s until all moved or damaged R.P.'s are reset.

1.5-1

Maintenance on roads listed in Contract Clause C-50: Purchaser Road Maintenance and Repair and C-60: Designated Road Maintainer shall be performed in accordance with "Forest Access Road Maintenance Specifications." If permission is granted to operate between November 1 and March 31, the purchaser shall be required to maintain all haul roads including those listed as "designated maintainer roads". If other operators are using, or desire to use these "designated maintainer roads", a joint operating plan shall be developed. All parties shall follow this plan.

1.5-3

Snowplowing shall not be permitted unless authorized, in writing, by the contract administrator.

SECTION 2 - CLEARING

2.1-1

Fell all vegetative material larger than 2 inches DBH or over 10 feet high between the marked right of way boundaries or if not marked in the field, between clearing limits specified on "Typical Section Sheet."

SECTION 3 - GRUBBING

3-1

All stumps shall be removed that fall between grubbing limits shown on the "Typical Section Sheet." Also those stumps with roots undercut by excavation shall be removed.

3-2

Grubbing limits are defined as the entire area between the external limits shown on the "Typical Section Sheet."

SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

4.1-1

Right of way debris is defined as all non-merchantable vegetative material larger than one cubic foot in volume within the clearing limits, excluding stumps between the clearing limits and grubbing limits.

4.1-2

All right of way debris disposal shall be completed prior to the application of rock.

4.2.3-3

Right of way debris shall not be placed against standing timber.

4.2.3-4

Right of way debris shall be scattered outside the clearing limits in natural openings, unless otherwise detailed in this plan.

SECTION 5 - EXCAVATION

5.1-1

Unless controlled by construction stakes or specific design sheets herein, roads shall be constructed in accordance with dimensions shown on the "Typical Section Sheet."

5.1-2

Purchaser shall not bury merchantable material.

5.1-3

Road grade and alignment shall conform to the State's marked location and drawings. Grade and alignment shall have smooth continuity without abrupt changes in direction. Maximum grades are 18 percent favorable and 15 percent adverse, unless otherwise detailed in this plan. Minimum radius curve is 50 feet.

5.1-4

On the following road segments maximum grades shall be as indicated.

Road	Location	Maximum Grade	Remarks
BR-ML	363+44 to 366+89	10%	See “Curve Widening” detail on page #24.
BR-ML	462+63 to 464+86	5%	See “Bridge Approach Regrade” detail on page #25.

5.1-5

Curve widening on the inside of curves shall be 2 feet extra on 80 to 100 foot radius curves and 4 feet extra on 50 to 79 foot radius curves.

5.1-7

Roads shall be constructed or reconstructed to the dimensions shown on the "Typical Section Sheet," within the tolerances listed below. Tolerance classes for each road are listed on the "Typical Section Sheet."

Tolerance Class	A	B	C
Road Width (feet)	+1.5	+1.5	+2.0
Subgrade Elevation (feet +/-)	0.5	1.0	2.0
Centerline Alignment (feet lt./rt.)	1.0	1.5	3.0

5.1-8

Excavation slopes shall be constructed no steeper than shown on the following table except as construction staked or designed:

Material Type	Excavation Slope Ratio
Common Earth	1:1
Fractured or loose rock	½:1
Hardpan or solid rock	¼:1

5.1-9

Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-10

Except as construction staked or designed, embankments shall be widened as follows:

Height at Centerline	Subgrade Widening
Less than 6 feet	2 feet
6 feet or over	4 feet

5.1-11

Embankment slopes shall be constructed no steeper than shown on the following table except as construction staked or designed:

Material Type	Embankment Slope Ratio
Common earth and rounded gravel	1½:1
Angular rock	1¼:1
Sandy Soils	2:1

5.1-12

Organic material shall be excluded from embankment.

5.1-14

Where side slopes exceed 50 percent, full bench construction shall be utilized for the entire subgrade width except as construction staked or designed.

5.1-16

On the following road segments through cut reconstruction shall be utilized with all excavated material end hauled or pushed to designated waste area.

Road	Excavation Location	Disposal Location
BR-ML	462+63 to 464+86	463+00 of the BR-ML (Immediately south of the reconstruction location in the existing clearing.)

5.1-21

Waste material shall not be deposited within 30 feet of a culvert installation.

5.1-22

Waste material shall not be deposited within 30 feet of a live stream.

5.1-23

Turnout locations noted on this plan are approximate. Locations shall be adjusted to fit final subgrade alignment and sight distances. Locations shall be subject to written approval of the contract administrator.

5.1-24

Turnouts shall be intervisible with a maximum of 1,000 feet between turnouts unless shown otherwise on drawings. Minimum dimensions are shown on the "Typical Section Sheet."

5.2-1

Road pioneering operations shall not undercut the final cut slope, deposit excavated material outside the clearing limits or restrict drainage.

5.3-1

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts.

5.4-1

Silt-bearing runoff shall not be permitted to go into streams.

5.5-2

Constructed or reconstructed subgrades shall be compacted.

5.5-5

Finished subgrade shall be crowned as shown on "Typical Section Sheet," uniform, firm, rut-free and shaped to ensure surface runoff in an even, unconcentrated manner.

SECTION 6 - DRAINAGE

6.2.1-1

Purchaser shall furnish, install and maintain galvanized metal (AASHTO specification No. M36) or corrugated polyethylene tubing (AASHTO specification No. M294) culverts as designated on the "Materials List."

6.2.1-2

Annular corrugated bands and culvert ends shall be used on metal culverts. On culverts 24 inches and smaller, bands shall have a minimum width of 12 inches; on culverts over 24 inches, bands shall have a minimum width of 24 inches. Manufacturer's approved connectors shall be used for corrugated polyethylene tubing.

6.2.1-5

On required roads: culverts, downspouts, flumes, bands and gaskets as listed on the "Materials List" which are not installed shall become property of the State.

6.2.1-6

Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of diameter.

Diameter	Gage	Corrugation
18"	16 (0.064”)	$2\ ^{2}/_{3}$" X $^{1}/_{2}$"
24" to 48"	14 (0.079”)	$2\ ^{2}/_{3}$" X $^{1}/_{2}$"
54" to 96"	14 (0.079”)	3" X 1"

6.2.2.1-1

Culvert, downspout, flume and energy dissipator installation shall be in accordance with the "Culvert and Drainage Specifications" and the National Corrugated Steel Pipe Association Installation Manual for Corrugated Steel Drainage Structures.

6.2.2.2-1

Any damaged galvanized coating or cut ends shall be retreated with a minimum of 2 coats of zinc rich paint.

6.2.2.3-1

Cross drains and surface culverts on road grades in excess of 3 percent shall be skewed at least 30 degrees from perpendicular to the road centerline, except that cross drain culverts at the low points of dips in roads shall not be skewed.

6.2.2.3-2

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not at less than 3 percent.

6.2.2.4-1

Installations of culverts 36 inches in diameter and over shall be subject to written approval by the contract administrator prior to making backfill.

6.2.2.5-1

Drainage structure out falls shall not terminate directly on unprotected soil that will erode. Downspouts, flumes and energy dissipators shall be installed to prevent erosion.

6.3-1

Ditches shall be constructed concurrently with construction of the subgrade and shall drain to culverts, ditchouts, and natural drainages.

6.3-2

Shaping the ditch line, culvert headwalls and catch-basins shall be completed prior to application of rock and shall be done in accordance with the "Typical Section" and "Culvert and Drainage Specifications" sheets.

6.4-1

Catch basins shall be constructed to resist erosion in accordance with the "Culvert and Drainage Specifications: Catch Basin" drawing. Minimum dimensions shall be two feet wide and four feet long with back slopes consistent with Clause 5.1-8: Excavation-Slopes.

6.5-1

Headwalls shall be constructed in accordance with the "Culvert and Drainage Specifications Headwall" drawing at all ditch relief culverts.

SECTION 7 - ROCK

7.1-1

Rock for construction or reconstruction under this contract may be obtained from an existing pit on State land as listed below. Development and use shall be in accordance with a written "Pit Development and Reclamation Plan." Upon completion of pit operations, the pit shall be left in the condition specified in said plan, subject to written approval by the contract administrator. Use of material from any other source must have prior written approval from the contract administrator. If other operators are using, or desire to use this pit, a joint operating plan shall be developed. All parties shall follow this plan.

Pit Location	Remarks
BR-8908 Hard Rock Pit NW¼ NE¼ Section 4 T 33N, R 6E, W.M.	Development of an existing hard rock source at station 44+61 of the BR-89 road. Development will involve clearing, stripping, drilling, shooting, and processing rock to generate riprap and 3-inch-minus ballast. Pit plan on sheet 29.
Commercial Rock Source	Acquisition of ¾-inch-minus crushed rock from a commercial rock source for use on steel bridge decks and as a leveling course for all precast concrete footings.

7.1-5

Rock for ballast, or riprap may be obtained from private sources at Purchaser's expense. The quality of any alternate rock must be equal to or greater than the quality of the rock specified in clause 7.1-1. Use of rock from any alternate source is subject to written approval from the contract administrator.

7.2.1.1-7

3-inch-minus ballast rock shall be 100% equal to, or smaller than, 3 inches in at least one dimension.

7.2.1.2-2

Rock shall contain no vegetative debris, dirt, or trash.

7.4.2-1

Apply at least the minimum required rock quantity as shown on "Typical Section Sheet."

7.4.2-2

Subgrade shall be approved, in writing, by the contract administrator prior to application of rock.

7.4.2-7

Turnouts and curve widening shall have rock applied to the same depth and specifications as the traveled way.

7.4.2-8

Each lift of rock shall be crowned as shown on "Typical Section Sheet," and shall be uniform, firm, rut-free and shaped to ensure surface runoff in an even, unconcentrated manner.

7.4.3-3

Rock shall be spread, shaped and compacted concurrently with rock hauling operations.

7.4.4-1

Riprap shall consist of angular stone placed as indicated in this plan, or as directed by the contract administrator.

Loose Riprap - The stone for loose riprap shall be hard, sound and durable. It shall be free from segregation, seams, cracks and other defects tending to destroy its resistance to weather. Loose riprap shall be free of rock fines, soil or other extraneous material.

Heavy Loose Riprap Grading Requirements		
At Least/Not More Than	Minimum Size	Maximum Size
40% / 90%	1 Ton (1/2 cu. yd.)	--
70% / 90%	300 lbs. (2 cu. ft.)	---
10% / 30%	---	50 lbs.

Light Loose Riprap Grading Requirements		
At Least /Not More Than	Size Range	Maximum Size
20% / 90%	300 lbs. to 1 Ton	---
80% / ----	50 lbs. to 1 Ton	---
10% / 20%	---	50 lbs.

7.4.4-2

Riprap shall be set in place in conjunction with or immediately following construction of the embankment. No placement by end-dumping or dropping of riprap shall be allowed.

SECTION 8 - STRUCTURES

8.1- LOCATION

The Purchaser shall install each structure listed in the table below in accordance with this plan.

Road	Location	Structure/Remarks
BR-ML	527+29 to 528+01	72 foot span, pre-constructed, modular type, painted steel bridge and pre-cast concrete footings. See sheet #26 for details.

8.3-1 - GENERAL BRIDGE REQUIREMENTS

The purchaser shall, under the provisions contained herein, design, fabricate, deliver and install at the project site, one shop assembled, HS 30-44 loading, steel, two-piece, portable, modular bridge superstructure complete with a curb or rail system and precast concrete footings. The superstructure shall be 72 feet-0 inches long by 14 feet-0 inches wide. The length of the superstructure shall be measured from out to out. The width shall be the clear roadway between the curbs or rails.

8.3-1.1 – BRIDGE GRADE

The bridge shall be installed at a 4 percent adverse grade (see sheet #26).

8.3-1.2 – APPROACH CUT AND FILL

The following road locations will require through cut and through fill type road construction. The cut and fill dimensions shown here are required to obtain satisfactory bridge approaches.

8.3-2 - REFERENCED SPECIFICATIONS AND STANDARDS

The materials and workmanship shall be of the highest grade throughout and in accordance with the best standard practices of modern bridge fabrication. All material used in the fabrication of the superstructure shall conform to the applicable specification. Copies of any referenced specification, standards, and codes may be procured by the purchaser, at their expense, from the following:

AASHTO American Assoc. of State Highway and Transportation Officials
444 North Capital Street, N.W.
Washington, D.C. 20001
www.aashto.org

ASTM American Society for Testing & Materials
100 Barr Harbor Drive
West Conshohocken, PA 19428
www.astm.org

AWS American Welding Society
550 North LeJune Road
Miami, FL 33126
www.amweld.org

SSPC Structural Steel Painting Council
40 24th Street
Pittsburgh, PA 15222-4643
www.sspc.org

8.3-3 - TECHNICAL SPECIFICATIONS

Design: The bridge superstructure shall be designed in accordance with AASHTO Standard Specifications for Highway Bridges, latest edition and any subsequent interim specifications.

Fabrication: The structural steel fabricating plant of origin shall be certified under the AISC Quality Certification Program. Certification categories shall include Simple and Major Steel Bridges.

Live Load: HS 30-44, deflection ratio shall not exceed L/500 of bridge length.

Structural Steel: All structural steel shall be of domestic (USA) manufacture and shall conform to the requirements of ASTM Specification A-572 or A-36.

Hardware: Manufacturer recommended bearing plates, elastomeric bearing pads and assembly bolts shall be included.

Decking: The steel bridge decking shall be 4 1/4" deep 7 gauge galvanized corrugated steel and shall be placed perpendicular to the direction of traffic. The deck shall have a positive connection joining the deck panels of the modular bridge sections. A galvanized 7 gauge side dam shall be furnished and shall extend 4 inches above the top of the corrugated steel deck. After installation of the bridge, the purchaser shall furnish and place compacted ¾-inch-minus crushed rock evenly over the bridge to a depth of 4 inches above the top of the corrugated steel deck.

Guard Rail: Guard rail shall be 12 gauge galvanized guide rail with standard flared metal end terminals unless approach guide rail is specified. The top of guard rail shall be no less than 15 inches above the top of the side dam.

Bulkheads: Manufacturer shall furnish an acceptable bulkhead for each end of the bridge to support the roadway at the end of the bridge. The bulkhead shall be galvanized steel with a minimum thickness of 7 gauge and shall extend from the top of the bridge footing to the top of the bridge stringers.

Certification of Materials: Mill test certificates shall be furnished for the steel stringers and the bridge deck. Certified mill test reports for steel bridge stringers with specified values shall include, in addition to other test results, the results of Charpy V-notch impact tests.

Welding: All welding shall be completed by welders certified in accordance with the requirements and qualification tests of the American Welding Society.

Precast Concrete Footings: Footings shall be constructed as per manufacturers details and drawings with minimum dimensions of 18" deep, 30" wide and 18' long. All concrete shall be precast off site and shall be Class 4000 (design strength of 4000 PSI in 28 days). All reinforcing steel shall conform to ASTM A 706 and shall be No. 6 minimum. Bars shall be lapped at least 24 diameters at all splices and shall be placed 2" clear of the nearest face of concrete. Spacing on reinforcing steel shall be a maximum of 12". Footings shall be delivered on site ready for installation.

Crushed Rock Leveling Course: Precast concrete footings shall be placed on a leveling course of ¾-inch-minus crushed rock.

8.3.5-1 - SCOPE OF PAINTING

Painting work will consist of the following:

Cleaning: All metal surfaces shall be prepared in accordance with SSPC-SP6 (commercial blast).

Painting: All metal surfaces shall be coated with a three coat micaceous iron oxide, moisture-cure urethane system that will consist of a prime coat, intermediate and topcoat.

8.3.5-2 - CLEANING

Before blast cleaning, visible deposits of oil or grease shall be removed by the methods specified in SSPC-SP1 Solvent Cleaning , or other agreed methods in accordance with section 6 of SSPC-SP6 (commercial blast).

Abrasive Blast Cleaning: All metal surfaces to be painted shall be abrasive blast cleaned in accordance with SSPC-SP6 (commercial blast), and the appearance of the blast cleaned surfaces shall approximate Visual Standard SP6 of SSPC VIS 1-89. Blast cleaning shall be performed using abrasive of a size which will produce a surface profile height of 1½ to 2 mils.

Prior to painting, all metal surfaces shall be free of all cleaning residue, supplemented with brushing if necessary.

Particular attention shall be given to edges, crevices, nuts, bolts, and rivets.

All bare metal surfaces shall be primed on the same day as cleaning.

8.3.5-3 - MATERIAL DESCRIPTION

The coating system for all steel surfaces to be painted on this project shall incorporate three single-component, moisture-cure polyurethane coats.

All steel coating products furnished for this project shall be manufactured by the same manufacturer.

All the protective coatings in this specification will require certification from the manufacturer that the coating can be applied at relative humidities up to 98%, temperatures down to 20 degrees F, and there is no restriction on dewpoint temperature differential if the surface is visibly dry and free from condensate.

All paint shall be prepared at the factory ready for application. The addition of thinner or other material to the paint after the paint has been shipped shall not be permitted, except as recommended by the manufacturer.

Packaging: The finished paint shall be furnished in new round steel containers of not more than 5-gallon capacity and of metal not thinner than 0.024-inch nominal thickness. The containers shall have lug type crimp lids with ring seals and shall be equipped with ears and bails. The containers shall meet U.S. Department of Transportation Hazardous Materials Shipping Regulations. The containers shall be lined if necessary to prevent damage by the paint. The lining shall not come off the can as skins.

All containers shall be labeled showing the exact title of the paint, the manufacturer's name, date of manufacture, the manufacturer's batch number and the specification number and lot number if appropriate.

Precautions concerning the handling and application of paint shall be shown on the label of paint and solvent containers.

8.3.5-4 - SPECIFIC MATERIAL PROPERTIES

Coatings supplied shall conform to the following minimum requirements:

PRIMER

Generic Type:	Zinc-rich, single component, moisture-cure urethane
Vehicle Type:	Moisture-cure urethane
Volume Solids:	60% minimum
Pigment Type:	Zinc dust
DFT:	3 mils DFT minimum (75 microns)
VOC:	Not to exceed 2.8 lbs/gal

INTERMEDIATE (Black) and TOPCOAT (Bronze)

Generic Type:	Refined coal tar/Micaceous Iron Oxide-filed, single-component, moisture-cure urethane
Vehicle Type:	Moisture-cure polyurethane
Volume Solids:	60% minimum
Pigment Type:	3 lbs/gal Micaceous Iron Oxide
Color:	Intermediate (Black) Topcoat (Bronze)
DFT:	4 mils (each coat) DFT minimum (200 microns)
VOC:	Not to exceed 2.8 lbs/gal

8.3.5-5 - APPLICATION OF PAINT

All painting to be performed under this contract shall be performed in conformance with the best practices of the trade, in conformance with recommendations of the coating manufacturer, and in conformance with applicable portions of the Steel Painting Council Specification SSPC-PA 1, when those specifications are not in conflict with these special project specifications.

All surfaces cleaned to bare metal shall be coated with the primer the same working day. Any cleaned surface which rusts before the application of the prime coat shall be recleaned.

After the surface has been prepared and primed as specified, one coat of intermediate black coal-tar polyurethane shall be applied. After the intermediate coat has cured, all metal surfaces shall receive one final topcoat of bronze coal-tar polyurethane.

Paint film thickness measurements will be made after the application of prime and top coats. A visual inspection for complete coverage will be made after the intermediate coat. One hundred percent of all thickness measurements shall be within the specified minimum dry film thickness. Where thickness measurements fall below the specified minimum, additional applications of paint shall be made as necessary to meet the thickness required.

Sufficient time shall elapse between successive coats to permit them to dry properly for recoating. Paint shall be considered dry for recoating when it feels firm, does not deform or feel sticky under moderate pressure of the finger, and the application of another coat of paint does not cause such film irregularities as lifting or loss of adhesion to the undercoat. It is recommended that a minimum of 6 hours drying time shall be allowed between each application. **Consult with coating manufacturer regarding specific recoat information.**

The surface of the paint being covered shall be thoroughly dry and free of moisture, dust, grease, or any other substance which would prevent the bond of succeeding applications. Abrasive blast cleaning will not be permitted in areas adjacent to areas that are in the process of being painted. Freshly painted surfaces shall be protected by the Purchaser from contamination by dust or foreign materials from any source. Contaminated surfaces shall be cleaned to the satisfaction of the Contract Administrator before any succeeding application of paint is made.

8.3.5-6 - PERFORMANCE PROPERTIES

The system identified in this specification meets or exceeds the following test requirements (all proposed equivalents must certify compliance to same requirements):

Corrosion Resistance, ASTM B117, Salt Spray Test:

Must pass 4000 hours minimum with less than 2mm creep from scribe. Panels must be 1/8 inch cold rolled steel minimum, having SSPC-SP10 Near White Blast with 2-3 mils angular profile.

Accelerated Weathering, ASTM G53:

Must pass 3000 hours QUV B bulb with no chalking, cracking, or gloss loss greater than 20 percent.

8.3-6 - WORKING DRAWINGS AND COMPUTATIONS

The purchaser shall prepare and submit three sets of complete design drawings and calculations for the bridge structure and precast concrete footings. All drawings and calculations shall be prepared, stamped, and signed by a Registered Professional Engineer.

Submittals shall be sent to:

Department of Natural Resources
c\o Northwest Region Engineer
919 N. Township St.
Sedro-Woolley, WA 98284

The calculations and drawings shall be complete and contain all detailed information required for review and approval. Drawings shall be no smaller than 11" X 17" sheets.

Delays in work because of the possibility of rejection, revision and resubmittal of documents are deemed a risk of the purchaser and shall not be the basis for claims of additional compensation. Within 30 calendar days after receipt of the submittals, a detailed review of the documents will be accomplished by the State and written approval or rejection of the submittals will be transmitted to the purchaser. NO FABRICATION WORK SHALL START PRIOR TO THE RECEIPT OF THE SUBMITTAL APPROVAL FROM THE STATE.

8.3-7 - INSTALLATION PRECAUTIONS AND RECOMMENDATIONS

Precautions will be taken to avoid damage to the structure or footings during delivery or installation. Precast concrete footings shall be handled in such a way that no concrete will be damaged or chipped. Structural members of the bridge shall not be bent or damaged in any way. Debris of any kind will not be allowed to build up on I-Beam flanges. The bridge shall be delivered and installed in such a way that the paint will not be scratched.

By recommendation only, the State suggests that crane type equipment be utilized to install the bridge on site.

8.3-8 - MATERIALS AND WORKMANSHIP

All materials used in the fabrication of the superstructure shall be new and of the highest standard quality as normally used for this type of fabrication, considering strength and best engineering practices. All members shall be designed with safety as a primary factor in withstanding high load stress.

8.3-9 - ACCEPTANCE

The State will accept the structure after it has been fabricated and delivered in accordance with the preceding specifications and after all required certifications have been furnished. One gallon of touch-up paint matching the final coat shall be furnished with the bridge at time of delivery.

SECTION 9 - ROAD AND LANDING TREATMENT

9.1-1

The following road shall be abandoned by the Purchaser prior to the termination of this contract.

Road	Location	Treatment
BR-104	0+00 to 7+76	Abandon

9.1-3

"Abandoned" treatment shall consist of:

1. Remove all ditch relief culverts. The resulting slopes shall be 1:1 or flatter. The removed fill material shall be placed and compacted in a location that will not erode into any type 1 through 5 waters or wetlands.

2. Remove all culverts in natural drainages. The resulting slopes shall be 1:1 or flatter. Strive for matching the existing native streambank gradient. The natural streambed width shall be re-established. The removed fill material shall be placed and compacted in a location that will not erode into any type 1 through 5 waters or wetlands.

3. All removed culverts shall be property of the Purchaser and shall be transported off site.

4. Construct non-drivable waterbars at natural drainage points and at a spacing which will produce a vertical drop of no more than 20 feet between waterbars and with a maximum horizontal spacing of 400 feet.

5. Waterbars shall be skewed at least 30 degrees from perpendicular to the road centerline on roads in excess of 3 percent grade.

6. Waterbars shall intercept the ditch and be keyed into the road cut slope and be outsloped to provide positive drainage. Outlets shall be on stable locations.

7. Inslope or outslope the road as appropriate.

8. Remove bridges and other structures.

9. Pull back unstable fill that has potential of failing and entering any type 1 through 5 waters or wetlands. Removed material shall be placed and compacted in a stable location.

10. Remove berms except as designed.

11. Block the road by constructing a triple tank trap so that four wheel highway vehicles cannot pass the point of abandonment. If necessary construct a vehicular turn-around near the point of abandonment.

12. Revegetate all exposed soils resulting from the abandonment work in accordance with "Section 10 - Revegetation".

9.2-1

Purchaser shall reduce or relocate landing debris, in a manner approved, in writing, by the contract administrator, to avoid landing failures and potential debris slides.

9.2-2

Purchaser shall provide for drainage of all landing surfaces as approved, in writing, by the contract administrator.

SECTION 10 – REVEGETATION

10.1-1

Purchaser shall revegetate all exposed soils within the grubbing limits resulting from construction, reconstruction, or abandonment.

10.1-2

Purchaser shall perform revegetation during the first available opportunity after construction, reconstruction, or abandonment is completed. Soils shall not be allowed to sit exposed for longer than one month without receiving revegetation treatment unless otherwise approved in writing by the contract administrator.

10.1-3

Revegetated soils that fail to germinate or are disturbed and re-exposed through any cause shall be revegetated to the point of full coverage.

10.2-1

Revegetation of all exposed soils shall be accomplished by manual dispersal of grass seed and fertilizer unless otherwise detailed in this plan. Other methods of revegetation must be approved in writing by the contract administrator.

10.3-1-1

Seed mix shall meet the following specifications:

Seed Species	% by Weight
Creeping Red Fescue	50
Elf Perennial Rye Grass	25
Highland Colonial Bentgrass	15
White Clover	10

All seed species shall have a minimum 90% germination rate.
Weed seed shall not exceed 0.5% by weight.

10.3-2

Fertilizer shall meet the following specifications:

Chemical Component	% by Weight
Nitrogen	16
Phosphorous	16
Potassium	16
Sulphur	3
Inerts	49

10.3-3

Revegetation application rates shall result in 50 pounds of in place seed mix and 200 pounds of in place fertilizer mix per acre of exposed soil.

10.4-1

Purchaser shall provide a protective cover over the revegetated area if revegetation occurs between July 1 and March 31. The protective cover may consist of, but not be limited to, such items as dispersed straw, jute matting or clear plastic sheets. The protective cover requirement may be waived by the contract administrator in writing if the Purchaser is able to demonstrate a revegetation plan that will result in the establishment of a uniform dense crop of 3 inch tall grass by October 31.

SECTION 11 - SPECIAL NOTES

11.1 Reconstruction

On the following road segments existing road grade and alignment shall be reconstructed to the specifications shown in the typical matrix sheet and special diagrams as listed.

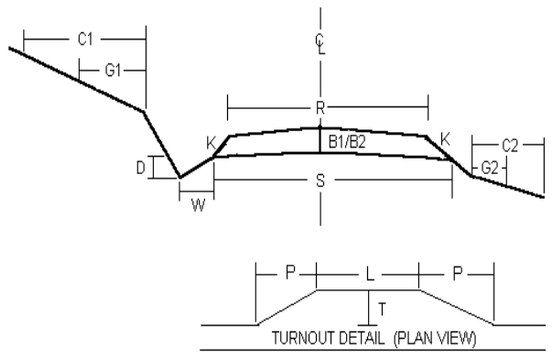
Road	Location	Title & sheet #	Waste Area
BR-ML	363+44 to 366+89	Curve Widening Sheet #24.	N/A
BR-ML	462+63 to 464+86	Bridge Approach Regrade Sheet #25.	463+00

ROAD #		BR-ML	BR-ML	BR-ML	BR-ML	BR-ML	BR-104	
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	REQUIRED	REQUIRED	REQUIRED	OPTIONAL	
CONSTRUCT / RECONSTRUCT		RECONSTRUCT	RECONSTRUCT	CONSTRUCT	CONSTRUCT	CONSTRUCT	CONSTRUCT	
TOLERANCE CLASS (A/B/C)		C	C	C	C	C	C	
STATION / MP TO		363+44	462+63	484+37	527+29	528+01	0+00	
STATION / MP		366+89	464+86	527+29	528+01	599+31	7+76	
ROAD WIDTH	R	12	12	12	14	12	12	
CROWN (INCHES @ C/L)		3	3	3	72 foot span, pre-constructed, modular type, painted steel bridge and pre-cast concrete footings	3	3	
DITCH WIDTH	W	3	3	3		3	2	
DITCH DEPTH	D	1	1	1		1	1	
TURNOUT LENGTH	L	50	50	50		50	25	
TURNOUT WIDTH	T	10	10	10		10	10	
TURNOUT TAPER	P	25	25	25		25	25	
GRUBBING	G1	5	5	5		5	5	
	G2	5	5	5		5	5	
CLEARING	C1	10	10	10		10	10	
	C2	10	10	10		10	10	
ROCK FILLSLOPE	K:1	1½	1½	1½		1½	1½	
❖ BALLAST DEPTH	B1	18	18	18	--	18	18	
CUBIC YARDS / STATION		114	114	114	--	114	114	
➢ TOTAL CY BALLAST		400	260	4900	--	8130	890	
❖ SURFACING DEPTH	B2	--	--	--	--	--	--	
CUBIC YARDS / STATION		--	--	--	--	--	--	
➢ TOTAL CY SURFACING		--	--	--	60**	--	--	
➢ TOTAL CUBIC YARDS		400	260	4900	60**	8130	890	
SUBGRADE WIDTH	S	16.5	16.5	16.5	--	16.5	16.5	

❖ Specified Rock Depth is FINISHED COMPACTED DEPTH in inches.

➢ Specified Rock Quantity is LOOSE MEASURE (Truck Cubic Yards) needed to accomplish specified FINISHED COMPACTED DEPTH. Rock quantities include volume for turnouts, curve widening and landings.

TYPICAL SECTION



** Total cubic yards of ¾-inch-minus crushed rock to be used for bridge surfacing and as a leveling course for precast concrete footings

TS Name: Belvedere Bald
App. No. 76688

MATERIALS LIST

LOCATION			LENGTH						RIPRAP					
ROAD #	STATION or MILEPOST	DIAMETER	CULVERT	TYPE	DOWNSPOUT	TYPE	FLUME	TYPE	INLET	OUTLET	TYPE	FILL	TOLERANCE	REMARKS
BR-ML	489+32	24	38	GM	--	--	--	--	20	30	H/L	NT	C	
	492+78	18	32	XX	--	--	--	--	3	6	L	NT	C	
	496+79	60	42	GM	--	--	--	--	60	80	H/L	NT	C	
	498+44	18	32	XX	--	--	--	--	3	6	L	NT	C	
	502+61	24	32	GM	--	--	--	--	10	20	H/L	NT	C	
	511+27	60	42	GM	--	--	--	--	60	100	H/L	NT	C	
	512+68	36	34	GM	--	--	--	--	40	60	H/L	NT	C	
	513+63	24	32	GM	--	--	--	--	10	15	H/L	NT	C	
	514+64	36	36	GM	--	--	--	--	40	80	H/L	NT	C	
	515+55	30	32	GM	--	--	--	--	30	50	H/L	NT	C	
	517+78	36	36	GM	--	--	--	--	40	80	H/L	NT	C	
	518+63	24	34	GM	--	--	--	--	20	30	H/L	NT	C	
	519+15	18	32	XX	--	--	--	--	3	6	L	NT	C	
	520+61	42	42	GM	--	--	--	--	60	100	H/L	NT	C	
	522+93	42	42	GM	--	--	--	--	60	100	H/L	NT	C	
	523+60	24	32	GM	--	--	--	--	10	20	H/L	NT	C	
	525+73	30	40	GM	--	--	--	--	30	50	H/L	NT	C	
	527+29	72 foot span, pre-constructed, modular type, painted steel bridge and pre-cast concrete footings							250	--	H/L	NT	C	See section 8 for details.
	528+01								--	250				
	528+71	24	34	GM	--	--	--	--	20	30	H/L	NT	C	

Note: **Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:**

Diameter	Gage	Corrugation
18”	16	2 2/3" x 1/2"
24” – 48”	14	2 2/3" x 1/2"
54” – 96”	14	3" x 1"

GM – Galvanized Metal PS – Polyethylene Pipe Single Wall PD – Polyethylene Pipe Dual Wall AM – Aluminized Metal C – Concrete XX – PD, PS, or GM
H – Heavy Loose Riprap L – Light Loose Riprap SR – Shot Rock NT – Native (Bank Run) QS – Quarry Spalls

TS Name: Belvedere Bald
App. No. 76688

MATERIALS LIST

LOCATION			LENGTH						RIPRAP					
ROAD #	STATION or MILEPOST	DIAMETER	CULVERT	TYPE	DOWNSPOUT	TYPE	FLUME	TYPE	INLET	OUTLET	TYPE	FILL	TOLERANCE	REMARKS
BR-ML	531+06	24	32	GM	--	--	--	--	10	20	H/L	NT	C	
	532+34	42	38	GM	--	--	--	--	60	100	H/L	NT	C	
	533+31	36	34	GM	--	--	--	--	50	80	H/L	NT	C	
	534+31	36	38	GM	--	--	--	--	50	70	H/L	NT	C	
	535+22	24	32	GM	--	--	--	--	10	20	H/L	NT	C	
	535+87	24	34	GM	--	--	--	--	10	20	H/L	NT	C	
	537+88	72	44	GM	--	--	--	--	110	180	H/L	NT	C	
	540+63	54	40	GM	--	--	--	--	60	90	H/L	NT	C	
	541+31	96	50	GM	--	--	--	--	220	350	H/L	NT	C	
	544+85	18	32	XX	--	--	--	--	3	6	L	NT	C	
	545+17	72	44	GM	--	--	--	--	110	180	H/L	NT	C	
	546+30	18	32	XX	--	--	--	--	3	6	L	NT	C	
	548+42	42	44	GM	--	--	--	--	40	80	H/L	NT	C	
	550+28	24	32	GM	--	--	--	--	10	20	H/L	NT	C	
	551+48	24	32	GM	--	--	--	--	10	12	H/L	NT	C	
	552+05	24	32	GM	--	--	--	--	10	12	H/L	NT	C	
	552+66	18	32	XX	--	--	--	--	3	6	L	NT	C	
	553+64	18	32	XX	--	--	--	--	3	6	L	NT	C	
	554+24	18	32	XX	--	--	--	--	3	6	L	NT	C	
	555+88	18	32	XX	--	--	--	--	3	6	L	NT	C	

REMARKS

Note: **Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:**

Diameter	Gage	Corrugation
18”	16	$2\ ^{2}/_{3}$" x $^{1}/_{2}$"
24” – 48”	14	$2\ ^{2}/_{3}$" x $^{1}/_{2}$"
54” – 96”	14	3" x 1"

GM – Galvanized Metal PS – Polyethylene Pipe Single Wall PD – Polyethylene Pipe Dual Wall AM – Aluminized Metal C – Concrete XX – PD, PS, or GM
H – Heavy Loose Riprap L – Light Loose Riprap SR – Shot Rock NT – Native (Bank Run) QS – Quarry Spalls

TS Name: Belvedere Bald
App. No. 76688

MATERIALS LIST

LOCATION			LENGTH						RIPRAP					
ROAD #	STATION or MILEPOST	DIAMETER	CULVERT	TYPE	DOWNSPOUT	TYPE	FLUME	TYPE	INLET	OUTLET	TYPE	FILL	TOLERANCE	REMARKS
BR-ML	563+19	18	32	XX	--	--	--	--	3	6	L	NT	C	
	561+71	18	32	XX	--	--	--	--	3	6	L	NT	C	
	565+06	96	54	GM	--	--	--	--	150	200	H/L	NT	C	
	571+30	24	32	GM	--	--	--	--	10	20	H/L	NT	C	
	573+06	18	32	XX	--	--	--	--	3	6	L	NT	C	
	574+10	96	54	GM	--	--	--	--	180	250	H/L	NT	C	
	577+30	108	60	GM	--	--	--	--	200	250	H/L	NT	C	
	578+28	24	30	XX	16	XX	--	--	10	20	H/L	NT	C	
	579+29	30	34	GM	--	--	--	--	10	20	H/L	NT	C	
	581+22	42	40	GM	--	--	--	--	20	40	H/L	NT	C	
	585+58	18	32	XX	--	--	--	--	3	6	L	NT	C	
	586+24	18	32	XX	--	--	--	--	3	6	L	NT	C	
	588+97	24	32	GM	--	--	--	--	8	12	H/L	NT	C	
	592+68	24	32	GM	--	--	--	--	8	12	H/L	NT	C	
	593+81	18	32	XX	--	--	--	--	3	6	L	NT	C	
	594+81	18	32	XX	--	--	--	--	3	6	L	NT	C	
	597+29	24	36	GM	--	--	--	--	10	20	H/L	NT	C	

Note: **Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:**

Diameter	Gage	Corrugation
18”	16	$2\ ^{2}/_{3}$" x $^{1}/_{2}$"
24” – 48”	14	$2\ ^{2}/_{3}$" x $^{1}/_{2}$"
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TS Name: Belvedere Bald
App. No. 76688

MATERIALS LIST

LOCATION			LENGTH						RIPRAP					
ROAD #	STATION or MILEPOST	DIAMETER	CULVERT	TYPE	DOWNSPOUT	TYPE	FLUME	TYPE	INLET	OUTLET	TYPE	FILL	TOLERANCE	REMARKS
BR-104	1+03	18	32	XX	--	--	--	--	3	6	L	NT	C	18
	1+63	24	32	GM	--	--	--	--	10	15	H/L	NT	C	
	2+66	24	32	GM	--	--	--	--	10	15	H/L	NT	C	
	3+34	18	32	XX	--	--	--	--	3	6	L	NT	C	
	4+12	18	32	XX	--	--	--	--	3	6	L	NT	C	
	4+70	24	32	GM	--	--	--	--	10	15	H/L	NT	C	
	6+72	24	32	GM	--	--	--	--	10	15	H/L	NT	C	
	7+20	24	32	GM	--	--	--	--	10	15	H/L	NT	C	

Note: **Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:**

Diameter	Gage	Corrugation
18”	16	$2\ ^{2}/_{3}$" x $^{1}/_{2}$"
24” – 48”	14	$2\ ^{2}/_{3}$" x $^{1}/_{2}$"
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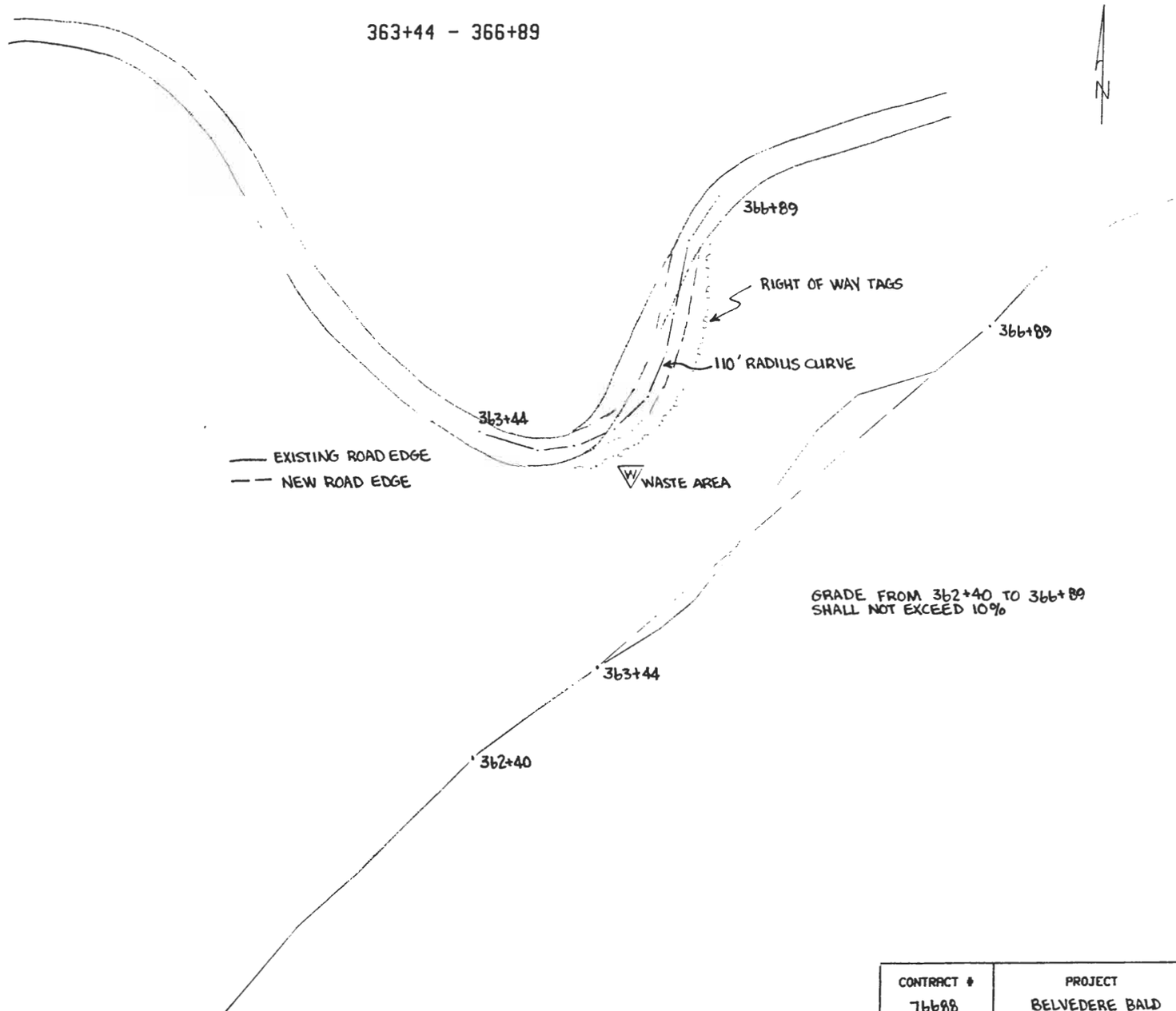
H – Heavy Loose Riprap L – Light Loose Riprap SR – Shot Rock NT – Native (Bank Run) QS – Quarry Spalls

TS Name: Belvedere Bald
App. No. 76688

BR-ML CURVE WIDENING

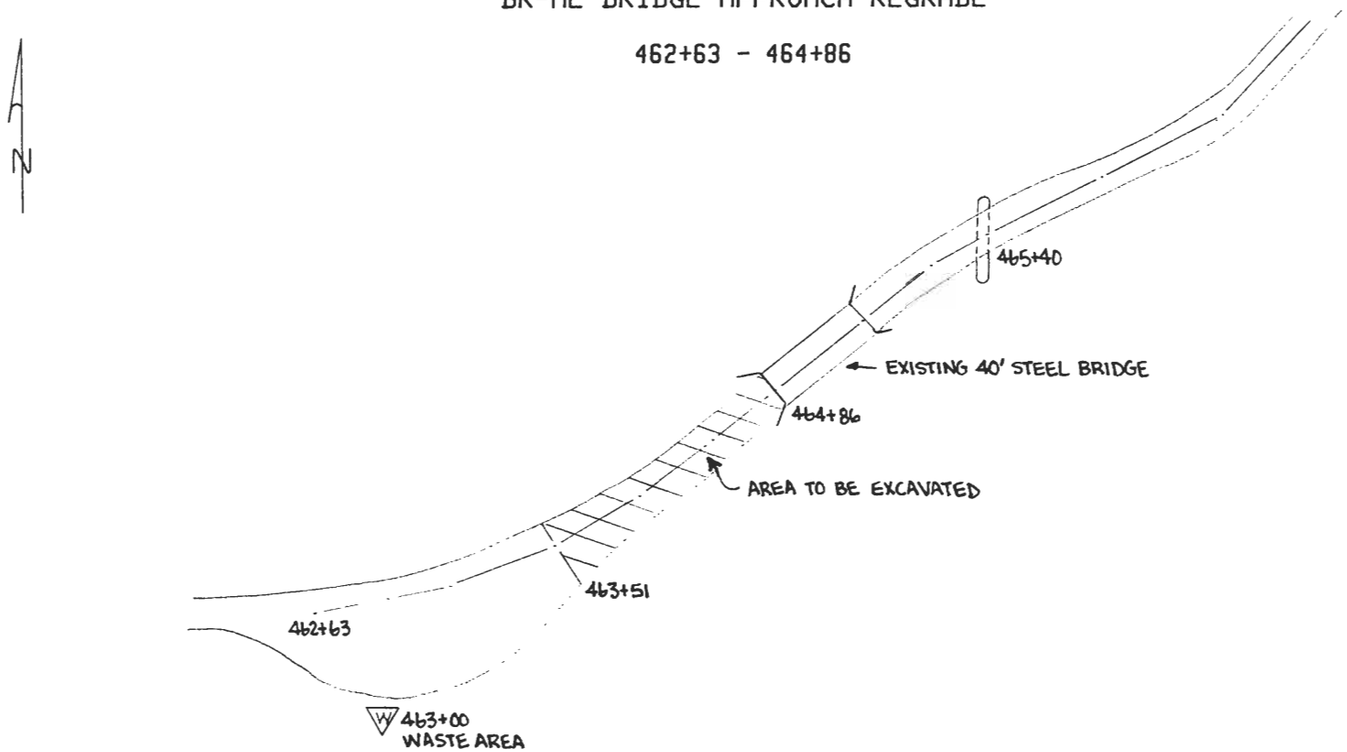
363+44 - 366+89



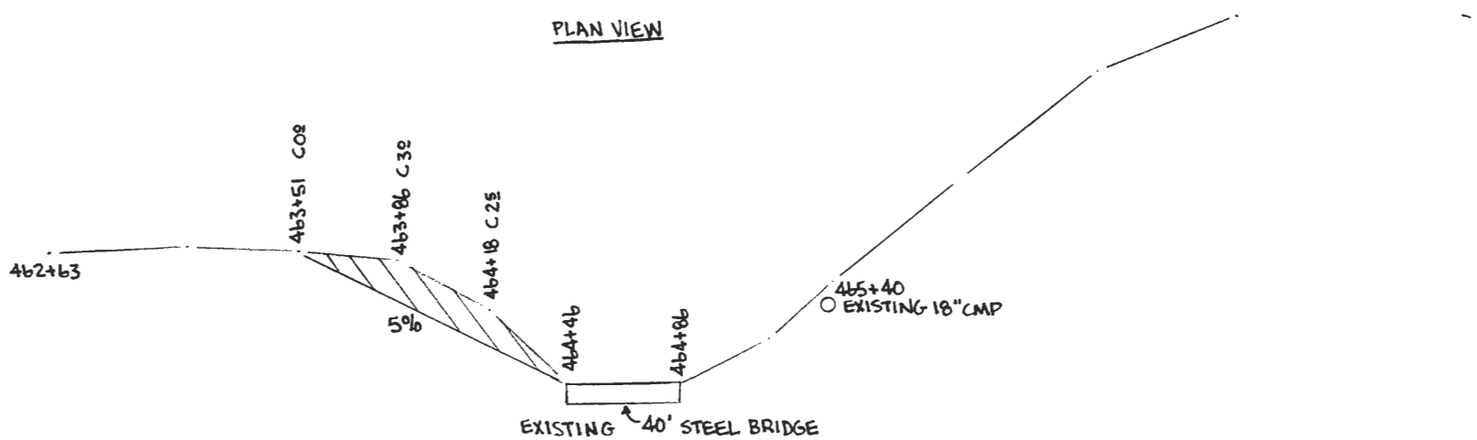
CONTRACT #	PROJECT	SHEET
76688	BELVEDERE BALD	24 OF 30

BR-ML BRIDGE APPROACH REGRADE

462+63 - 464+86



PLAN VIEW

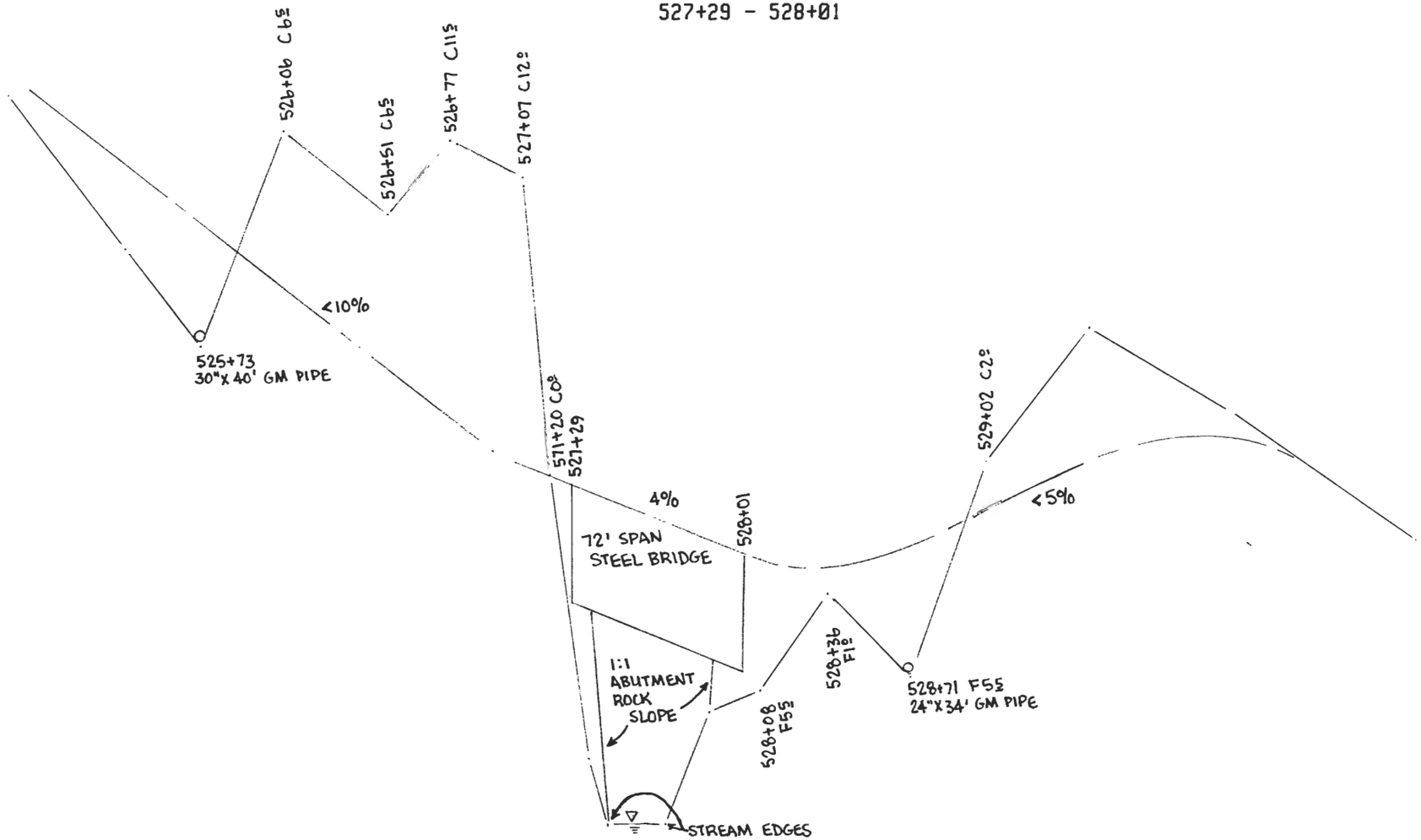


PROFILE VIEW

CONTRACT #	PROJECT	SHEET
76688	BELVEDERE BALD	25 OF 30

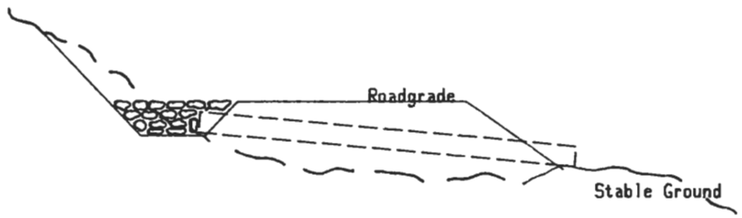
STEEL BRIDGE INSTALLATION PROFILE

527+29 - 528+01



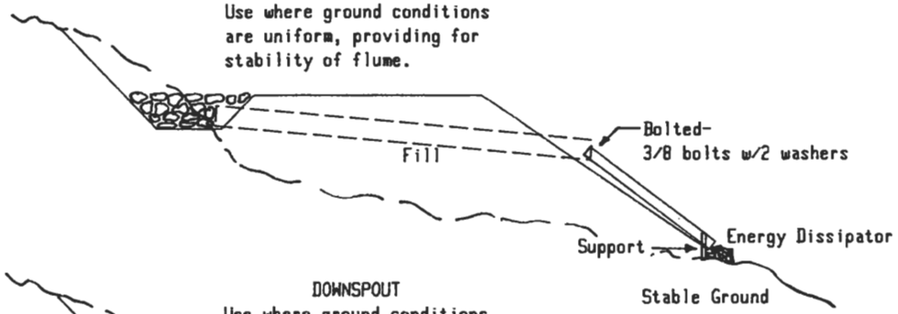
CONTRACT #	PROJECT	SHEET
76688	BELVEDERE BALD	26 OF 30

CULVERT AND DRAINAGE SPECIFICATIONS



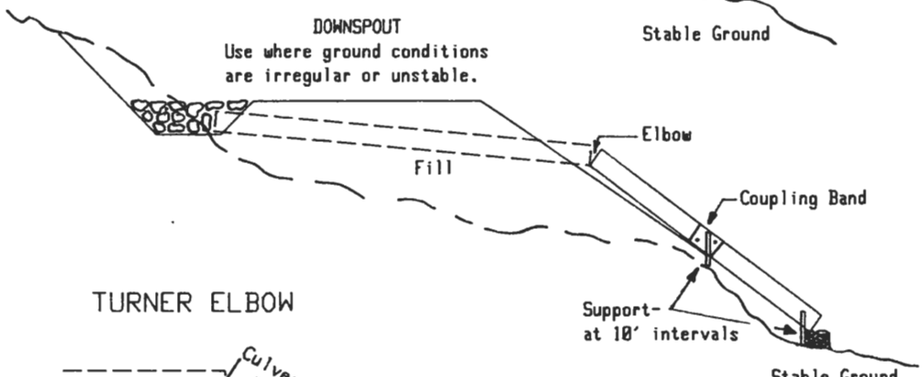
FLUME

Use where ground conditions are uniform, providing for stability of flume.

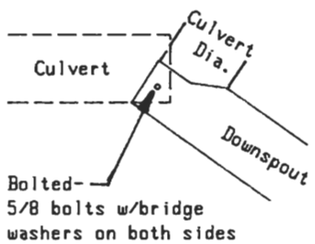


DOWNSPOUT

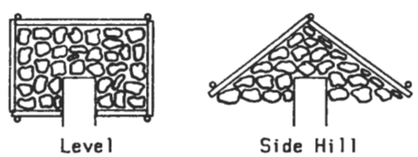
Use where ground conditions are irregular or unstable.



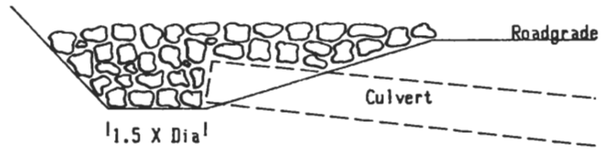
TURNER ELBOW



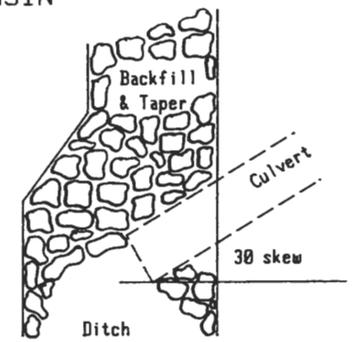
ENERGY DISSIPATORS

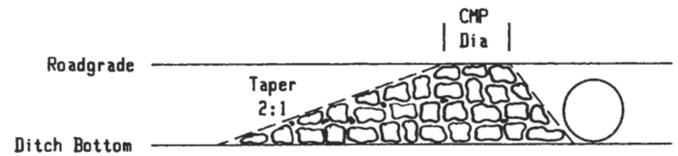


HEADWALL/CATCHBASIN



Headwall to be constructed of impervious material that will resist erosion.





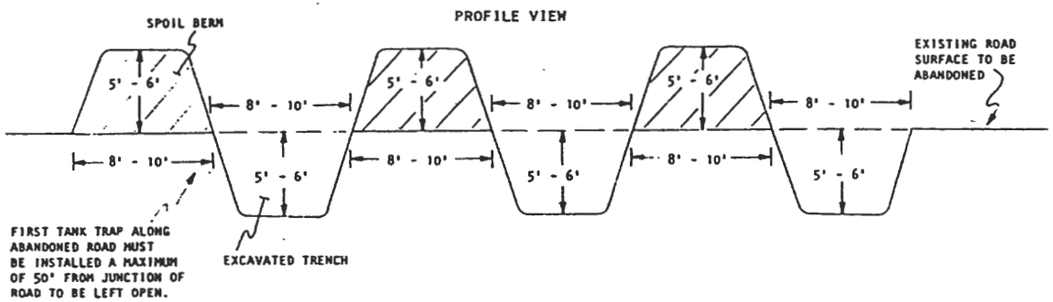
12/86

CONTRACT #	PROJECT	SHEET
76688	BELVEDERE BALD	27 OF 30

CONSTRUCTION DETAILS

TRIPLE TANK TRAP DETAIL
FOR ABANDONED ROADS

PROFILE VIEW

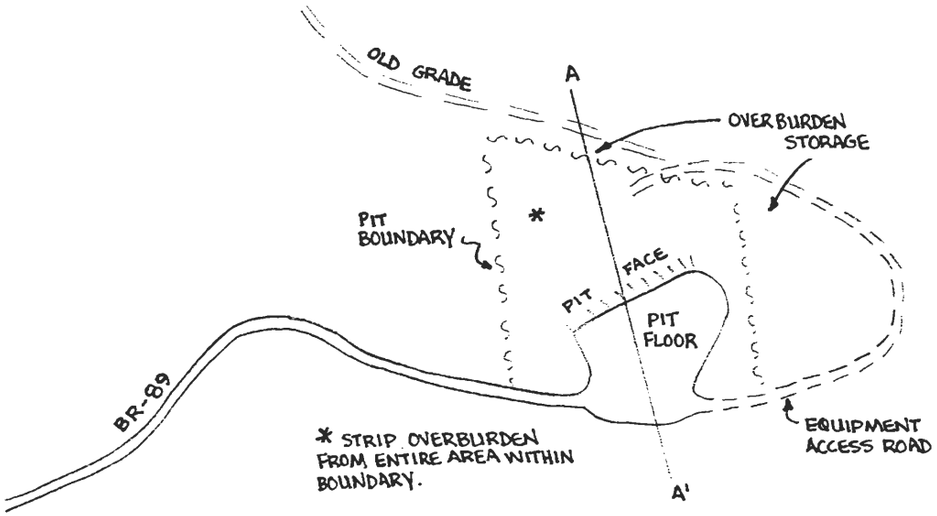


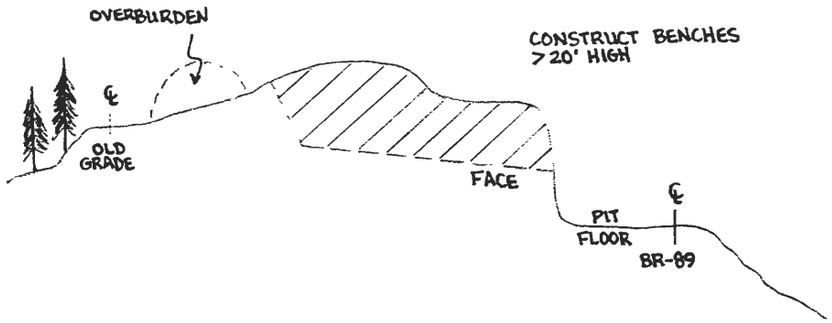
CONTRACT #	PROJECT	SHEET
76688	BELVEDERE BALD	28 OF 30

PIT DEVELOPMENT PLAN

BR-8908 HARD ROCK PIT

NW1/4NE1/4 S4-T33N-R6E





PIT SPECIFICATIONS

ALL ROCK PIT OPERATIONS SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:

PIT WALLS SHALL BE MAINTAINED IN A CONDITION TO REDUCE THE POSSIBILITY OF THE WALLS SLIDING OR FAILING.

PIT WALLS SHALL BE MAINTAINED AT A HEIGHT NO GREATER THAN 12 ft.

PIT WALLS SHALL NOT BE UNDERMINED.

THE WIDTH OF WORKING BENCHES SHALL BE A MINIMUM OF 1-1/2 TIMES THE MAXIMUM LENGTH OF THE LARGEST MACHINE IN USE.

PIT FLOORS AND BENCHES SHALL HAVE A UNIFORM SURFACE AND BE SELF DRAINED AT A MINIMUM OF 2% OUTSLOPE.

SAFE CONTROL OF BORROW PIT WALLS, INCLUDING THE OVERALL SLOPE OF WALLS, SHALL BE CONSISTENT WITH RECOGNIZED ENGINEERING STANDARDS AND THE NATURE OF THE GROUND AND TYPE OF MATERIAL BEING EXCAVATED.

EXCAVATION METHODS SHALL BE SELECTED WHICH WILL ENSURE WALL AND BANK STABILITY INCLUDING BENCHING AS NECESSARY TO OBTAIN A SAFE OVERALL SLOPE IN ACCORDANCE WITH THE FOLLOWING TABLE:

MATERIAL	MAXIMUM SLOPE RATIO HORIZ.:VERT.	MAXIMUM SLOPE ANGLE VERT. DEGREES
WELL ROUNDED LOOSE SAND	2:1	27
COMPACTED SHARP SAND	1-1/2:1	34
AVERAGE SOILS	1:1	45
COMPACTED ANGULAR GRAVEL	1/2:1	63
SOLID ROCK; COMPACT SHALE	0:1	90

CONTRACT #	PROJECT	SHEET
76688	BELVEDERE BALD	29 OF 30

DEPARTMENT OF NATURAL RESOURCES

FOREST ACCESS ROAD

ROAD MAINTENANCE SPECIFICATIONS

I. NEW ROADS (Prior to acceptance of contract or acceptance on timber sale)

A. Cuts and Fills

1. Maintain slope lines as constructed. Remove slides from the ditches and roadway. Replace fills to 1½-1 slopes with selected material or as directed. Remove overhanging material from cut slopes.

2. Material from slides or other sources requiring removal shall not be deposited in streams or at locations where it will erode into streams or water courses.

3. Undesirable slide materials and debris shall not be mixed into the surface material.

B. Surface

1. Grade and shape road surface, turnouts and shoulders to original crown, inslope or outslope as directed to provide suitable traveled surface and surface water runoff in an even, unconcentrated manner.

2. Blading must not undercut backslope at bottom of ditchline.

3. Watering may be required to control dust and to retain fine surface rock.

4. Desirable surface material shall not be bladed off the roadway.

5. Replace surface material lost or worn away.

6. Remove berms except as directed by the State.

C. Drainage

1. Keep ditches and drainage channels at outlets and inlets of culverts clear of obstructions and functioning as intended.

2. Inspect and clean culverts at least monthly, with addition inspection during storms and periods of high runoff. This must be done even during periods of inactivity.

3. Add stable material at outlet end of the culvert as needed to stabilize stream bed.

4. Headwalls - maintain to road shoulder level with material that will resist erosion.

5. Keep silt bearing surface runoff from getting into live streams.

D. Structures

1. Repair bridges, culverts, cattle guards, fences and other road structures to condition required by construction specifications.

E. Termination of Use or End of Season

1. Do maintenance work to minimize damage from the elements such as blading to insure correct runoff, ditch and culvert cleaning, water bars.

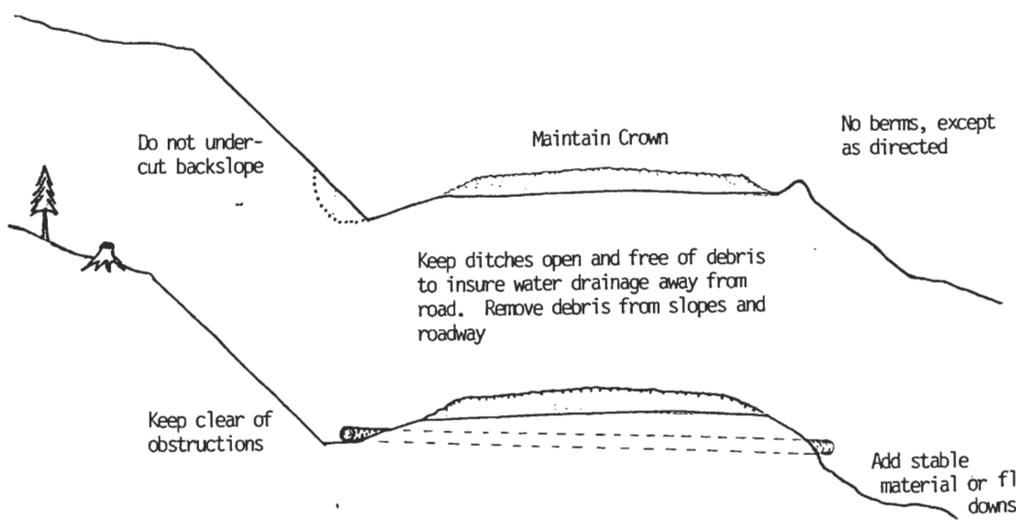
F. Debris

1. Remove fallen timber, limbs, stumps from slopes or roadway.

II. Existing Roads - Timber Sale, Operator Maintained

A. Same as I above but not to exceed the condition of the road on the date the contract was signed.

III. A.R.R.F. - Direct maintenance to comply with these specifications.



CONTRACT #	PROJECT	SHEET
76688	BELVEDERE BALD	30 OF 30

6/86